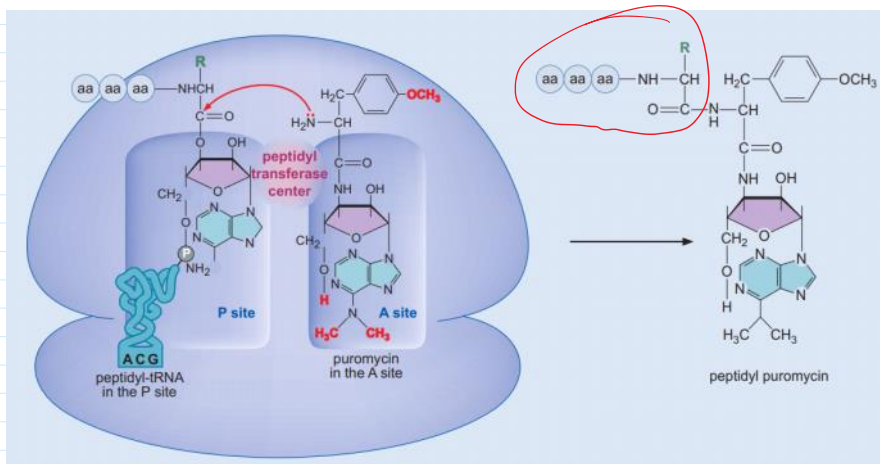


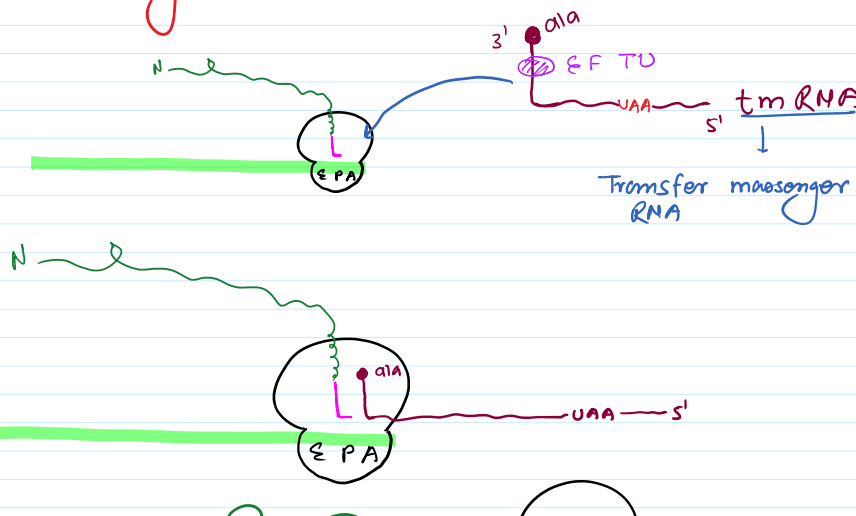
Drug that affect The process of Translation →

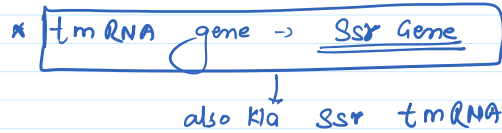
Antibiotic/Toxin	Target Cells	Molecular Target	Consequence
Tetracycline	Prokaryotic cells	A-site of 30S subunit	Inhibits aminoacyl-tRNA binding to A-site
Hygromycin B	Prokaryotic and eukaryotic cells	Near A-site of 30S subunit	Prevents translocation of A-site tRNA to P-site
Paromycin	Prokaryotic cells	Adjacent to A-site codon-anticodon interaction site in 30S subunit	Increases error rate during translation by decreasing selectivity of codon-anticodon pairing
Chloramphenicol	Prokaryotic cells	Peptidyl transferase center of 50S subunit	Blocks correct positioning of A-site aminoacyl-tRNA for peptidyl transfer reaction
Puromycin	Prokaryotic and eukaryotic cells	Peptidyl transferase center of large ribosomal subunit	Chain terminator; mimics 3' end of aminoacyl-tRNA in A-site and acts as acceptor for nascent polypeptide chain
Erythromycin	Prokaryotic cells	Peptide exit tunnel of 50S subunit	Blocks exit of growing polypeptide chain from the ribosome; arrests translation
Fusidic acid	Prokaryotic cells	EF-G	Prevents release of EF-G-GDP from the ribosome
Thiostrepton	Prokaryotic cells	Factor-binding center of 50S subunit	Interferes with the association of EF2 and EF-G with factor-binding center
Kirromycin		EF-Tu	Prevents conformational changes associated with GTP hydrolysis and therefore EF-Tu release
Ricin and α-sarcin (protein toxins)	Prokaryotic and eukaryotic cells	Chemically modifies RNA in factor-binding center of large ribosomal subunit	Prevents activation of translation factor GTPases
Diphtheria toxin	Eukaryotic cells	Chemically modifies EF-Tu	Inhibits EF-Tu function
Cycloheximide	Eukaryotic cells	Peptidyl transferase center of 60S subunit	Inhibits peptidyl transferase activity



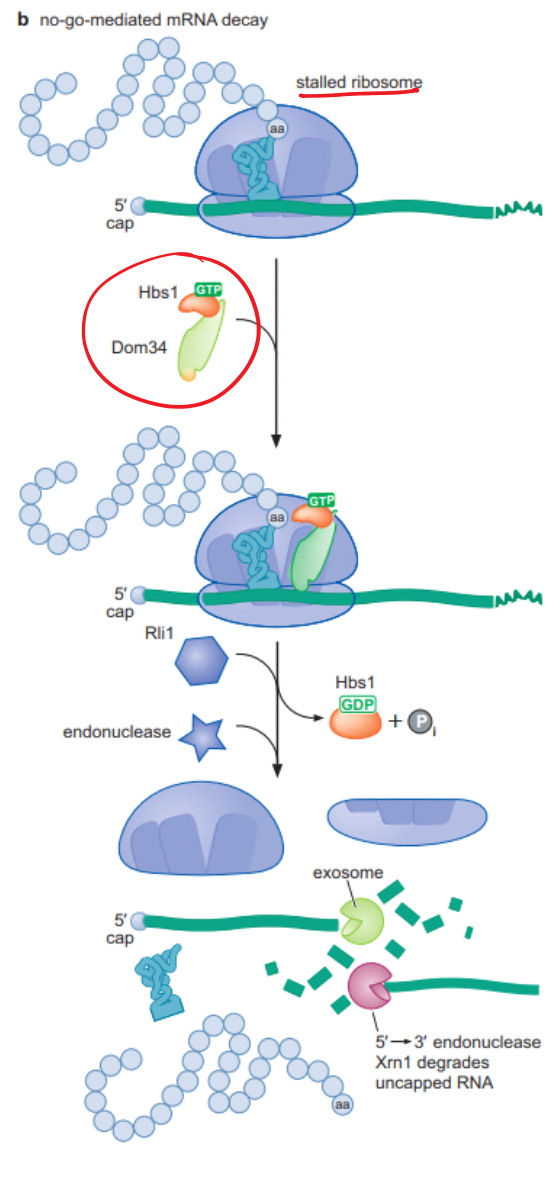
Termination of Translation without Stop codon

- Ribosome release from broken mRNA —
- In prokaryote —





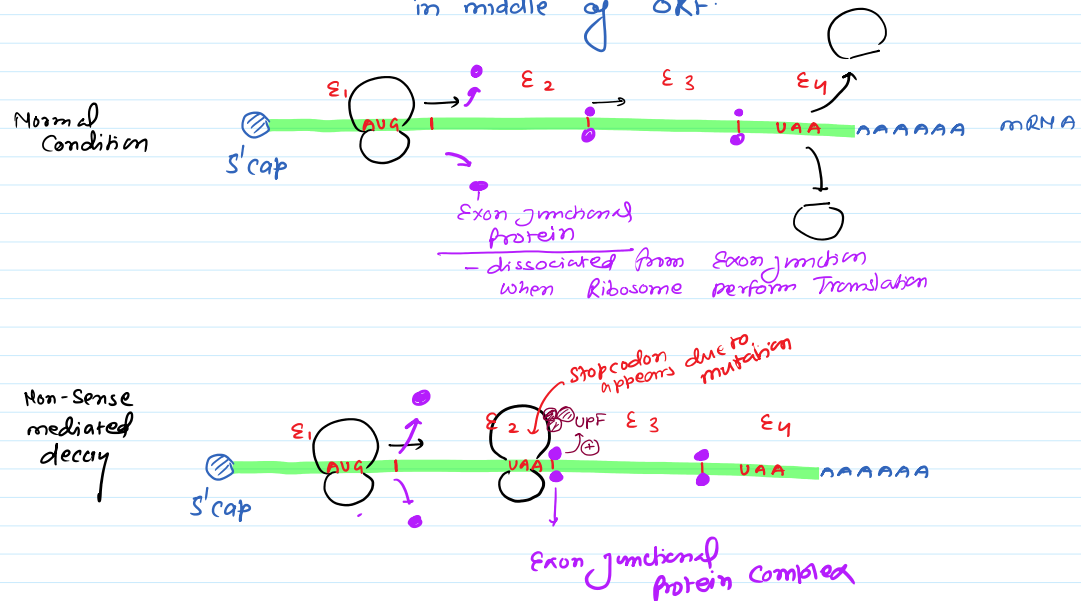
- (i) Non-stop mediated decay
- (ii) non-go mediated decay



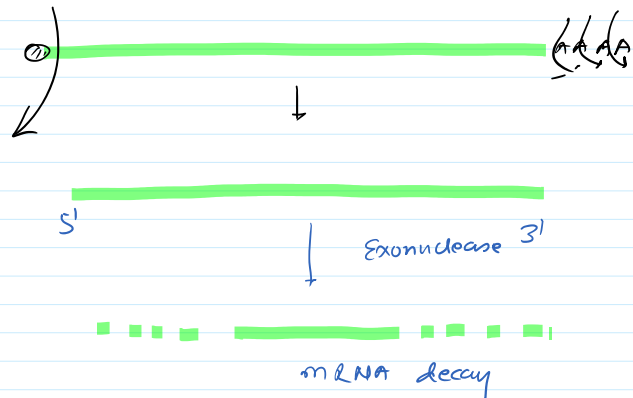
Reason For Non-Go mediated decay

→ Non-Sense mediated decay

→ Some times Non-Sense Codon +nt in middle of ORF.

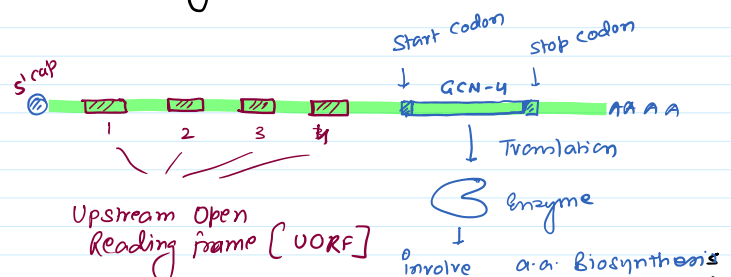


- UPF activated by Exon junctional protein Complex
- Upf Recruit → Decapping Enzyme
→ depolyadenylating enzyme



Translation Termination by upstream Open Reading frame

yeast



in a.a. Starvation Condition GCN-4 should Express

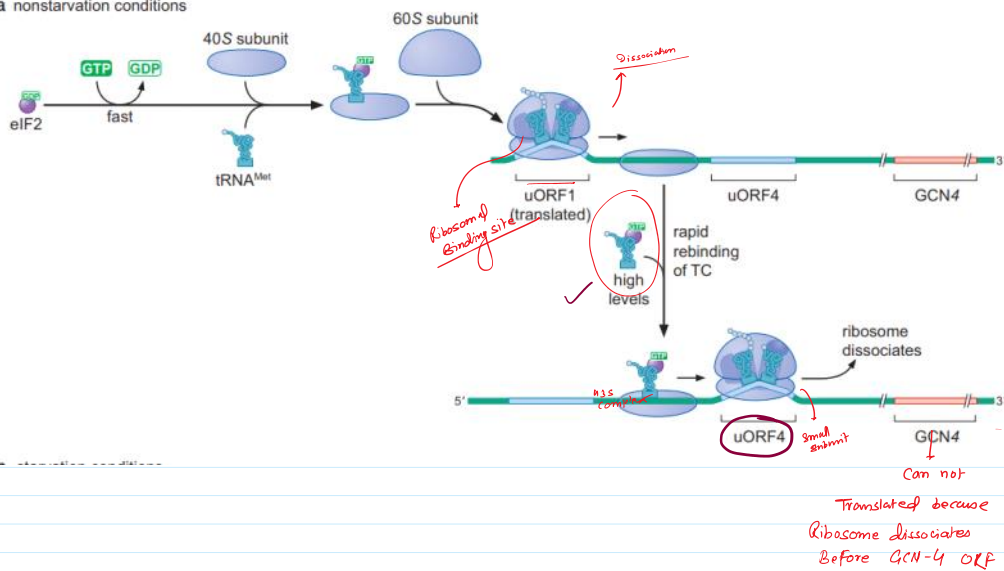
if a.a. $\uparrow\uparrow$. GCN 4 \rightarrow should not Express

① if a.a. is already \uparrow in cell

- there is no need to translate GCN 4

$\left[\begin{array}{l} \text{a.a.} \\ \text{eIF-2-GTP} \end{array} \right] \rightarrow \text{Ternary Complex } \uparrow\uparrow$

a nonstarvation conditions

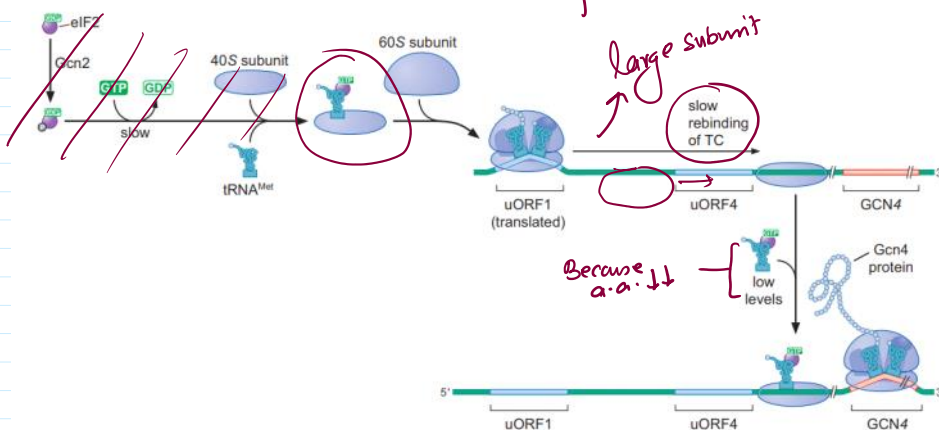


if a.a. Starvation Condition

- GCN 4 Should Express.

- Ternary complex (TC) \downarrow

b starvation conditions



* Because of low level of Ternary complex
Rebinding of TC with small subunit is
slow

↓
 Small subunit reached to GCN-4 ORF
 ↓
 if TC binds at GCN-4 ORF
 large subunit → Translation start.

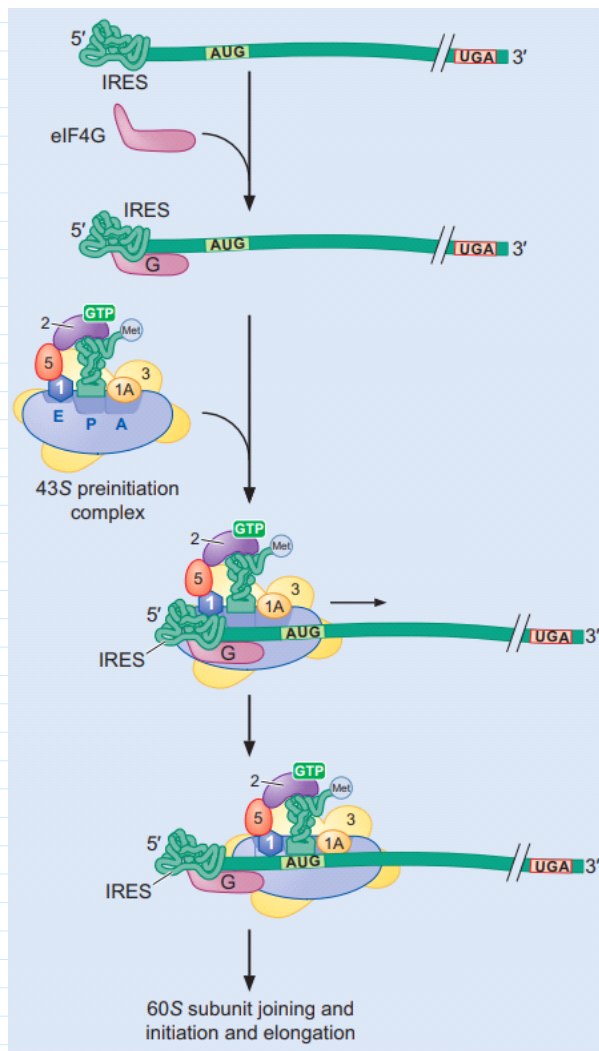
Viral mRNA Expression in Eukaryotic Host

Viral mRNA → • 5' Cap -nt

• Kozak seq -nt

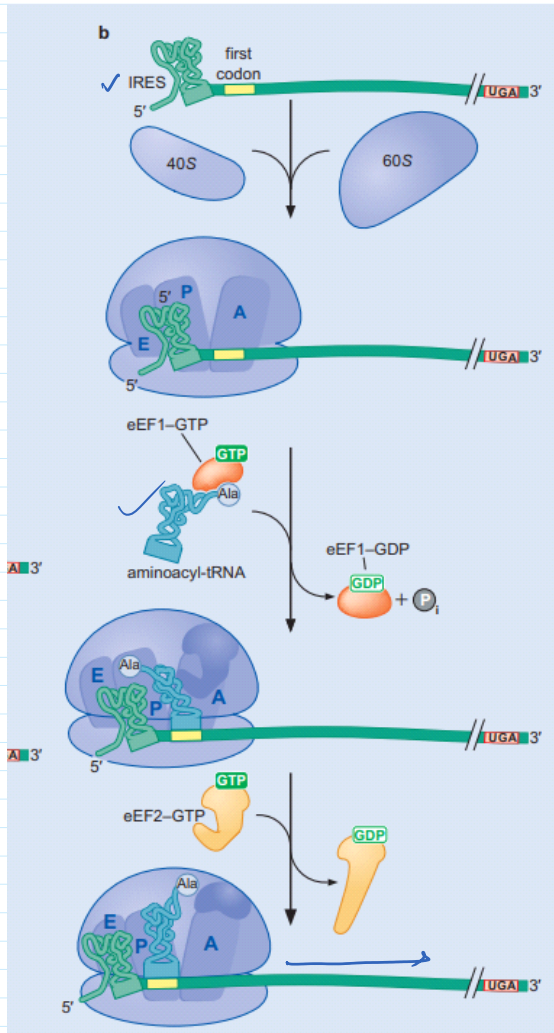
• IRES +nt → Recognized by Host Ribosome

Internal Ribosomal Entry site
 IRES → Ribosomal Binding



Polio-Virus

IRES - Directly recruit eIF-44



Cricket Paralysis virus
 झींगुर
 Direct Recruitment
 of Ribosome on IRES

In Stress Condition or in Viral infection

(1) Global Protein Synthesis Slow down

eIF-2 α Kinase [GCN2 α]

↓
 eIF2-GDP^P after phosphorylation
 eIF-2-GDP can not
 Convert into GTP

↓
 eIF 2 α (GTP) ↓↓↓ → Translation ↓

(2) Global Translation initiation blocked

4E Binding Protein (Cup, maskin, PHAS)

↓
 Binds with eIF4E & Blocks

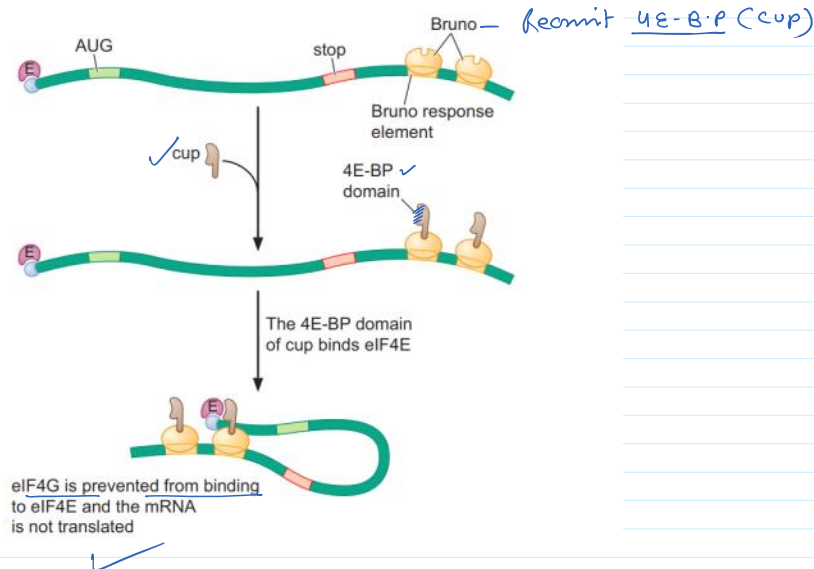
The Recruitment of 4EUG

also k_a 4E-BP

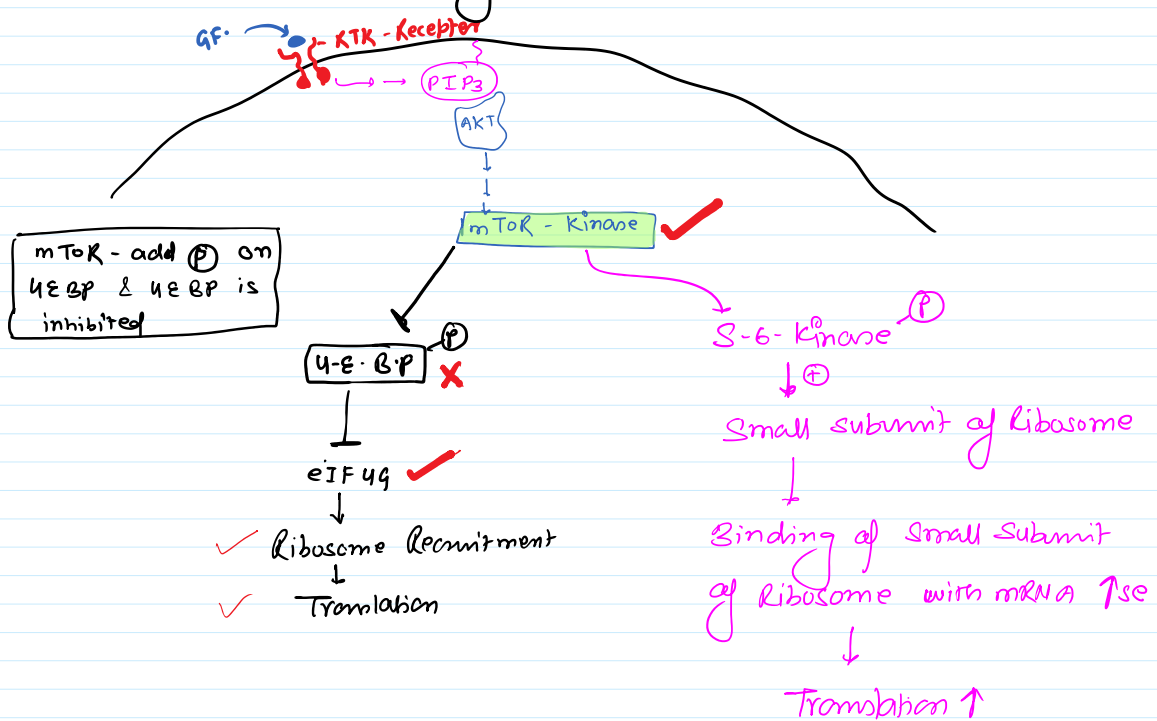
Block Translation

binds with eIF4E & blocks
The recruitment of eIF4G

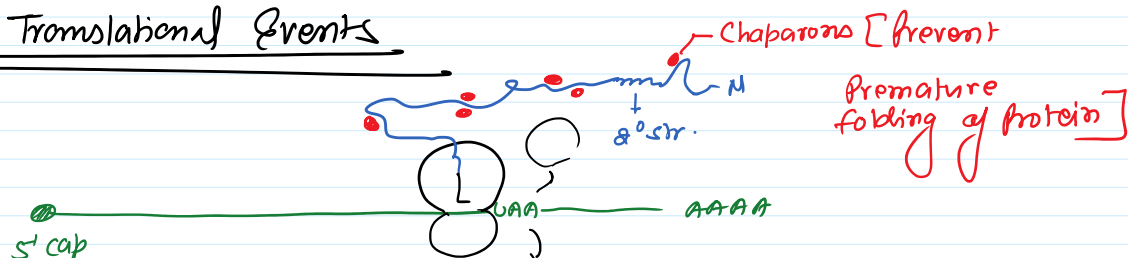
Translation can not
initiate

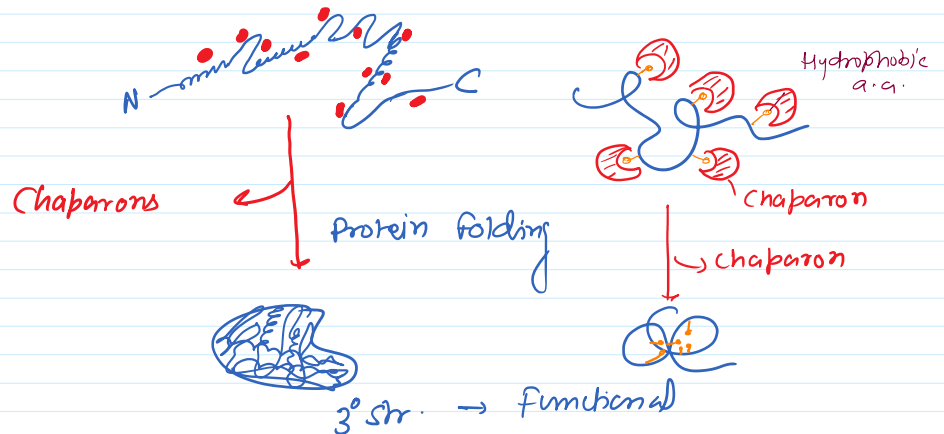
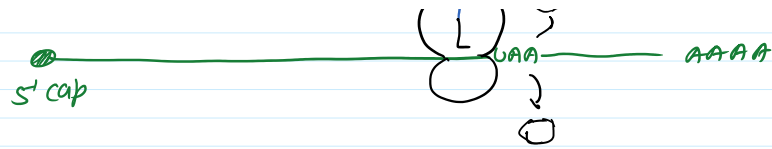


When Growth Signal is +ve



Post Translational Events





Chaperons

① Hsp 70 [Heat Shock Protein]

- Prevent premature folding
 - Binds with unfolded or partially folded protein
 - Binds with hydrophobic a.a. on protein
- eg. Cyt Hsp 70
mt Hsp 70
chl Hsp 70
ER - hsp 70 (Bip)

* After complete protein synthesis
hsp 70 is released from protein
↓
Protein folding

* Chaperon - Assist in protein folding

② Hsp 90

- Assist folding of
- Steroid hormone Receptor
- Tyrosine kinase Receptor

③ Hsp-60

- multisubunit protein arranged in 2 layer
- Form a Drum like str.
- water excluded from interior part of
Chaperon
- Assist Protein Folding in This str.
By ATP dependent manner